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ABSTRACT

Longitudinal data on the language of one German-speaking child were gathered from her 16th to her 26th month. Speech acts involving "where" questions were isolated and analyzed. The following order of referential development was discovered: (1) pragmatic conditions taking the form of certain action-contexts first relieve the discourse between caretaker and child from the requirement of establishing a common referential space by linguistic means; (2) in an ordered succession of action contexts the child learns to differentiate the internal structure of common referential spaces, i.e., the child learns to distinguish between local reference and object reference; (3) in the verbal interaction between caretaker and child that is embedded into these action contexts, the child learns to distinguish between different types of referring expressions, which subdivide a common space of living in different referential domains and thus relieve local reference from being totally dependent on pragmatic conditions; and (4) "where" questions of caretakers are very well adapted to the child's referential capabilities--those not answered by the child but by the caretakers themselves or that were not answered at all generally did not fit into the developmental order of action contexts that has been described. (Author/JB)

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PRAGMATIC CONDITIONS ON LEARNING HOW TO REFER TO LOCALITIES

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I. Posing the problem

A child at the beginning of his linguistic development has normally acquired some motor capacity to move around in space and perhaps even some preliminary concept of space. Whatever this preliminary concept of space may be, we assume that in learning how to linguistically refer to localities within some space the child now encounters at least four central problems. These four problems are related to the empirical observation that children at the beginning of their linguistic development only refer to localities of objects that are already in the common focus of attention of caretaker and child; whereas several months later they succed in denoting localities in such a way that e.g. they can control their caretaker's searching for an object, whose locality may not have been known to the caretaker.

1. Old/new information

Of these four problems the most crucial one, we think, is the distinction between old and new information - since (beyond the just mentioned empirical observation) this distinction is necessarily presupposed by genuine reference.

2. Common referential spaces (universes of discourse)

The second problem is related to the contextual dependency of reference and the linguistic and nonlinguistic procedures the participants in a speech-situation may use in order to establish a sufficient agreement on what the relevant contextual information for any particular referential act is. In case of local reference this relevant contextual information is defined as a common referential space, i.e. a spatial domain of reference that is sufficiently agreed upon by the participants of a speech-situation.

3. Internal structure of common referential spaces

The third problem is related to the internal structure of common referential spaces. Referring to a locality essentially means that this locality is identified in relation to an ordered (often fuzzy) set of localities defining a certain common referential domain. We assume that this internal order is at least partially defined by
a) an alternativeness-relation that holds between the localities of a certain domain(i.e. there cannot be two or more localities

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that are 'dentical);
b) a many-many relationship between objects and localities (i.e. an object can be placed at different localities at different times and different objects can be placed at one locality at different times);
c) a hierarchical relation that holds between different subdomains of a certain common referential space;
d) certain marked points in relation to which localities within some common spatial domain of reference may be determined. These marked points of reference are traditionally called the 'origines' of speaker and listener.
The following analysis will, however, be restricted to a very early developmental period during which children apparently do not yet encounter the problem that the 'origines' of speaker and hearer must be linguistically differentiated, how to coordinate 'origines', and how to defer 'origines' in cases where anaphorical deixis is used. Instead of this there seems to be a 'common conversational origo' of caretaker and child.

4. Meaning of referential expressions

The fourth problem is related to the meani g of referential expressions. The denotation of a referential expression is not only determined by its particular context of use but also by the meaning that referential expression has in any context of use.

In learning how to refer to localities children thus have to learn how to integrate both kinds of information, linguistic and contextual information, whereby contextual information presupposes an internally structured common referential space, and whereby linguistic and contextual information determine a denotation, i.e. a locality, that is a piece of new information for a listener in a given speech-situation.

II. Outline of the empirical study

In order to study this learning-process we tried to develop a heuristic by analyzing the longitudinal data of one child, Simone, who is Max Miller's daughter.

The data we analyzed are based on tape-recordings and extensive descriptions of nonlinguistic contexts. The data range from Simone's 16th to her 26th month of life. Simone produced during 60 hours of tape-recording ca. 20,000 utterances (not included: immediate repetitions that were not interrupted by another speaker).

From the data we selected all those speech-act sequences where
a) caretaker or child asked a where-question and child or caretaker gave an answer;
b) child performed a request that was reformulated as a where-question by caretaker and caretaker or child gave an answer or no answer was given at all;
c) caretaker asked a where-question and only caretaker gave an

answer or no answer was given at all.
In Simone's data there were 634 speech-act sequences that fulfilled these criteria. 590 sequences (93%) could be clearly interpreted by us and thus represent our data base.
According to our specific developmental questions we were interested in finding out
a) how local reference is established by caretaker and child when answering where-questions or some functional equivalent, and
b) whether the kinds of where-questions the child's caretaker asked were adapted to the referential capabilities of the child.

III. Stages of the development of local reference

Two main stages characterize the development of local reference in this specific type of discourse (where-question and answer) between Simone and her caretakers during the observed 10 months of Simone's language-development.

Stage I

The first stage, in our data beginning with the 16th month of Simone, can be subdivided in three substages each one being characterized by the appearance of a new action-context for where-questions and answers.

1. Searching for objects I (from 16th month on)

This action context is very often initiated by the child who requests a certain object. The caretakers may respond to this request by asking a where-question, which is usually answered by the caretakers themselves and frequently the child says 'da' ('there') or 'hier' ('here') when she has found the intended object. However, in her searching for the object the child is not very much supported by the referring expressions the caretakers use. It is their deictic gestures and actions that are primarily used by the child for controlling her search.

Text I (age: 18;3 / MLU: 1.000)*

[is sitting on her rocking-
horse and looks around]

* Sequences of where-questions and answers in Simone's data
Utterances of the child are on the left and they are underlined. Utterances of the caretakers are on the right. M=mother, Ma=Max Miller = Simone's father. The nonlinguistic context and certain paralinguistic features of utterances are represented within square brackets. Paralinguistic vocalizations are represented within parenthesis. The symbols ‾, ´, ˙, at the end of the child's utterances distinguish progredient, rising, and falling terminal intonation contours. The age of the child is stated in months and weeks thus: 12;2 = 12 months, 2 weeks. MLU signifies the mean length of utterance of the child.

lala
pacifier
[leaves the room]

Ma: *Hier is dein Lala, Micky! Schau! Da! Mickchen!* [rufend]
Mickchen, da is dein Lala.
Here is your pacifier, Micky! Look! There! Mickchen! [shouting]
Mickchen, there is your pacifier.

[enters the room]

M: *Gucke mal! Da isser!*
Look! There it is!
Ma: *Da drüben.*
Over there.

[M and Ma are pointing to the pacifier]

M: *Guckemal! Da!*
Look! There!
Ma: *Da drüben isser!*
Over there it is!
M: *Da isser!*
There!

[follows the lead of M's hand, but still cannot find the pacifier]

Ma: *Simone, da is dein Lala!*
Simone your pacifier is there!

(whining)

M: *Simone, guckmal! Ich geb'n dir. Guck mal! Da.*
Simone, look! I give it to you. Look! There.
[gives the pacifier to Simone]

2. Labelling-game (from 16th month on)

Like 'searching for objects' labelling-games appear in our data from the beginning. Text II illustrates such a labelling-game.

Text II (age 16;3 / MLU: 1.000)

[Simone and M look at a picture-book]

puppa
doll

M: *Wo is die Puppa?*
Where is the doll?

da
there [points to a cup in the picture-book]

Puppa? Das is ne Tasse.
Doll? That's a cup.

In child language research these labelling-games have been described quite often. So let us move on to the next action-context.

3. Extended labelling-game (from 18th month on)

Extended labelling-games occur in our data from Simone's 18th month on. They differ from simple labelling-games in that objects of a certain type are labelled with regard to alternative subdomains such as different pages of a picture-book or different bodies, parts of which have to be labelled, etc.

Text III (age: 19;3 / MLU: 1.008)

[Simone and her parents]

M: *Mickchen, sag mal! Wo is eigentlich Mama's Hand? Wo is Mama's Hand?*
Mickchen, tell me! Where is actually Mama's hand? Where is Mama's hand?

da' [points to M's Hand]
there

Da.
There.

Ma: *Mickchen, wo hat- wo hat- wo hat Maxe seine Augen?*
Mickchen, where are- where are- where are Max 's eyes?

da' [drawled out]
there

Und wo hat Maxe seinen Mund?
And where is Max 's mouth?

mun' (= Mund)
mouth

Und wo hat Maria die Augen?
And where are Maria's eyes?

da' [points to M's eyes]
there

M: *Ja.*
Yes.

Ma: *Wo hat Maria den Mund?*
Where is Maria's mouth?

da' [points do M's mouth]
there

Und wo hat- wo hat... Maxe die Nase?
And where is- where is ... Max 's nose?

na' (= *Nase*) [points to Ma's nose]
nose

Let us summarize the main points concerning local reference in this first stage: A common referential space is confined to the perceivable surroundings (for the most part a room) or to some subdomain or alternative subdomains within the perceivable surroundings that are used as a common game-context. The internal structure of these common referential spaces is certainly defined by an alternativeness-relation between localities from the outset; however

local reference - if it comes to be established at all - is identical to reference to the object, whose locality has to be identified. Local reference is not yet verbalized by Simone as a relation between intended object and intended locality. And because the object is in the common focus of attention of caretaker and child at the time a referring expression succeeds in establishing reference, local reference by means of using linguistic referring expressions is old information.
Of course you could make the objection that the where-questions turning up in labelling-games and extended labelling-games are no genuine where-questions at all but rather questions meaning something like: Which one is the object that satisfies this or that description?; and so you could come to the conclusion that these speech-act sequences do not tell very much about local reference. However, with the first part of this criticism you would be in complete agreement with us, since what we are saying is that because of the child's incapability for distinguishing between local reference and object reference she can in principle only answer where-questions by identifying the objects whose locality has been asked for. And exactly this capability is exploited by labelling-games which thus perfectly exhibit what local reference of the child can be in the first stage.
The child mainly uses deictic expressions: 'da' ('there') and 'hier' ('here') and descriptive expressions for the object, whose locality has been asked for. The caretakers use all kinds of deictic and descriptive expressions for referring to localities and descriptive expressions for referring to the object, whose locality has been asked for.
However, local reference (being identical to object reference) is essentially established by the use of nonlinguistic means such as deictic gestures and actions. On this stage the development of local reference apparently presupposes the development of object reference. And in the course of the child's development of local reference old forms (f.e. expressions like 'da' ('there') which are only used to refer to objects) are then gradually used to express new functions (f.e. the expression 'da' ('there') is now also used to refer to localities).

Transitional phase between stage I and stage II

There is an interesting transitional phase between stage I and stage II. From Simone's 19th month on a new action-context for where-questions occurs in our data, namely hide-and-seek-games. An object, first Simone or her caretakers - later all kinds of objects, is hidden and found at one and the same locality. Where-questions, which soon are also asked by Simone for the first time, are now answered by primarily identifying a locality, which, however, remains old information during the discourse. Nevertheless there is a beginning of differentiation between object and locality, and this distinguishes this action-context from stage I and makes it a transitional phase to stage II.

Text IV (age 20;2 / MLU 1.06)

[Simone and her father (Ma) play with Simone's pacifier]

Ma: *Deck ihn mal zu! Versteck den Lala (= Schnuller) mal!*
Cover it up! Hid the pacifier!

[puts a towel on the pacifier]

Wo is der Lala?
Where is the pacifier?

zu'
closed

Wo is der Lala?
Where is the pacifier?

lala~ [complaining]
pacifier

Ja, wo is dein Lala?
Well, where is your pacifier?

lala~ [loudly complaining]
pacifier

Ja, wo is denn dein- wo is der Lala?
Well, where is your- where is the pacifier

da' [takes the towel away
there and looks at the pacifier]

Stage II

On the second stage the previously described action-contexts for where-questions still occur in our data. But there are two new successive action-contexts and they define two substages of stage II.

1. Searching for objects II (from 19th month on)

Beginning with Simone's 19th month the old action-context of searching for objects gradually begins to change in a significant way.
Answers to where-questions, which soon are also asked by the child himself, now may require the localization of objects beyond the perceivable surroundings. This would not be possible, if the child had not firmly comprehended the difference between local reference and reference to the object, whose locality has been asked for. An important outcome of this is, that the localization of an unperceivable object can be new information to the person asking a where-question. However, since the searching domain is no longer clearly defined as a certain game-context or, generally, the perceivable surroundings, the question arises how the child and her caretakers ensure that they share enough contextual information with regard to the referential space that determines which locality (within or somewhere beyond the perceivable surroundings) has been denoted by a referring expression.
In this developed context of searching for objects the child learns

to solve this contextual problem on a first level by learning to distinguish different types of referring expressions according to their different meaning rules. Generally, there are two different types of referring expressions:
a) Deictic expressions, which are expanded to include also expressions like 'da oben' ('up there') and 'da unten' ('down there'), are only used to refer to localities within the perceivable surroundings.
b) Descriptive expressions and descriptive expressions combined with deictic expressions are used to refer to localities within and beyond the perceivable surroundings or to subdomains within the non-perceivable surroundings. In case the child uses a referring expression of the second type, the linguistic and the non-linguistic context (e.g. common expectancies concerning possible movements of objects) still have to determine what the relevant referential space and subsequently the denotation of such a referring expression is.
Of course this distinction between deictic expressions on one side and deictic and/or descriptive expressions on the other side is only gradually acquired by Simone in this developed context of searching for objects. Text V illustrates e.g. the difficulties Simone still has in her 24th month of life, if she wants to refer to some locality within some spatial subdomain that lies beyond the perceivable surroundings.

Text V (age 24;2 / MLU: 2.04)

[In the bathroom]

lala'
pacifier
wo issen de lala'
where is the pacifier

Ma: *Maxe hat keinen.*
Max doesn't have one.

küche lala'
kitchen pacifier
He?
da is küche ist ein obe ein lala'
there is kitchen is a above a pacifier

[points away from the bathroom]

2. Generalized action-context (from 23th month on)

Towards the end of our observation period a further action-context occurs in our data. In this action-context the main purpose of where-questions and answers is an exchange of information independent from any particular action like searching for objects. Certain where-questions asked by Simone's caretakers now require the identification of an object's past or future locality. This presupposes a complete disdinction between an object and its locality, which is the last developmental change we find in our data with respect to Simone's capacity for local reference(cf. text VI for an answer of Simone, in which she refers to the past locality of an object).

Text VI (age: 24 / MLU: 2.12)

[In Simone's room]

[runs out of the room]

[comes back]

brot' [looks to M and brings her the bread]

M: *Haste dir Brot geholt in der Küche? Wo lag denn das Brot?*
Did you go for bread into the kitchen? Where did the bread lie?

tisch lag [looks to M]

Auf'm Tisch lag das. Ne?
It lay on the table.

IV Summary

This description of the development of local reference in Simone's data certainly is nothing else but a first and still very rough heuristic. Nevertheless we think that already this description of Simone's development gives some plausibility to the following hypotheses, which,we think, can be derived from our pilot study

a) pragmatic conditions taking the form of certain action-contexts first relieve the discourse between caretaker and child from the requirement of establishing a common referential space by linguistic means;

b) in an ordered succession of action-contexts the child learns to differentiate the internal structure of common referential spaces, i.e. the child learns to distinguish between local reference and object reference - a distinction, which is a prerequisite for referring to a locality in such a way that new information may be linguistically conveyed to a listener in a given speech-situation;

c) in the verbal interaction between caretaker and child that is embedded into these action-contexts the child learns to distinguish between different types of referring expressions, which subdivide a common space of living in different referential domains and thus relieve local reference from being totally dependent on pragmatic conditions;

d) where-questions of Simone's caretakers are very well adapted to Simone's referential capabilities. Out of the where-questions of the caretakers, that were not answered by Simone but by the caretakers themselves or that were not answered at all, only very few did not fit into the developmental order of action-contexts that has been described.

Developmental schema for local reference in Simone's data (16th to 26th month of life)

Action-context	Age (month)	Old/new information	Delimitation of common referential space	Internal structure of common referential space	Types of referring expressions used by the child	
Searching for objects I	from 16th on	Local reference is old information	Perceivable surroundings (PS)	Local reference is identical to object reference	deict.gest. deict.expr. descr.expr.	object reference
Labelling-game	from 16th on	as above	game context: subdomain of PS	as above	as above	
Extended labell.-game	from 18th on	as above	game context: alternative subdomains of PS	as above	as above	
Hide-and-seek game	from 19th on	as above	game context: subdomain of PS	Beginning of differentiation between local and object reference	deict.gest. deict.expr. (da, hier)	transition from obj. to local reference
Searching for objects II	from 19th on	Local reference is new information	Alternative subdomains of a common living space. Main division between PS and non-PS by means of different types of referring expressions	Local reference is independent from referring to the object, whose locality has to be identified.	deictic descr. or deict. and descr.	PS PS and non-PS local reference
Generalized action-context	from 23th on	as above	as above	Local reference is independent from the present position of object. Past and future localities of objects.	as above	